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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/408,323 09/29/99 EBNER

J MTC6610 (39-2)

000321 HM12/0111
SENNIGER POWERS LEAVITT AND ROEDEL
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ST LOUIS MO 63102

EXAMINER

MAIER, L

ART UNIT

PAPER NUMBER

1623

7

DATE MAILED:

01/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/408,323

Applicant(s)

Ebner et al

Examiner

Leigh Maier

Group Art Unit

1623



☐ Responsive to communication(s) filed on _____

☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-199 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-199 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2, 3, 4, 5*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

* No. 2 and No. 3 are
duplicates.

Howard C. Lee

Howard C. Lee
Primary Examiner
Art Unit 1623

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Status of the Claims

Claims 1-199 are pending and under examination.

Priority

Applicant's claim of priority from the parent case, U. S. Application Serial No. 09/248,655, and U. S. Provisional Application 60/075,988 is acknowledged.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-22, 38, 43, 48-99, and 165-199 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 13, 38, 43, 48, 49, 53, 66, 71, 79, 165, and their dependent claims: The phrase "...oxygen at the surface [of the carbon support]. ." renders the claims vague and indefinite. It is not clear whether the term "oxygen at the surface" is limited to covalently-bonded oxygen alone, as in the case of oxides, or if it includes "*oxygen-containing functional groups*" as described on page 10, lines 13-26, of the specification. Because the terms "in the presence of

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oxygen” and “oxygen at the surface” are both used in some claims, it is assumed that these terms are not being used interchangeably---that is, “oxygen at the surface” would require covalently-bonded oxygen in some form, and that “in the presence of oxygen” refers to molecular oxygen in the reaction atmosphere.

Regarding claim 54: The claim contains the unusual terminology, “. . .the process is contacted in a continuous. . .” Should “contacted” be “*conducted*” instead, as in claims 2 and 14, for example?

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-199 are rejected under 35 U.S.C. 103(a) as being unpatentable over Franz (US 4,147,719) in view of Hess et al (US 3,340,097); Hershman (US 3,969,398); Coloma et al (J. Catal., 1995); Ebner et al (US 5,627,125)

Franz teaches the preparation of glyphosate by the oxidation of an aqueous solution of N-phosphonomethyliminodiacetic acid (PMIDA) with a heterogeneous catalyst comprising noble metal (Pt or Rh) on activated carbon. The product is isolated by filtration. Franz further teaches that the formaldehyde produced in the reaction is oxidized to CO₂. See col 1, the examples, especially F-10, and claims.

Franz does not teach a continuous process, but going from a batch process to a continuous one is considered to be an obvious modification. (MPEP 2144.04, section V-E)

Franz does not teach the use of a catalyst comprising (a) promoters(s). Hess teaches that other metals, in combination or as alloys, have a promotional effect on the catalytic activity of platinum. See col 1, lines 46-51. Employing one or more promoters with the conventional carbon-supported noble metal catalyst would be an obvious modification in order to boost the catalytic activity.

Franz does not characterize the catalyst in terms of surface area or particle size or teach the activation of the catalyst by heating to high temperatures. In a similar process, Hershman effects the same reaction using only an activated carbon catalyst. The catalyst is characterized by having a surface area of 100 to 2000 m²/g, as measured by the BET method, and particle size of about 20 to 325 mesh. See col 3, lines 47-53 and claims 9-12. In the absence of evidence to the

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contrary, it would be expected that these surface areas and particle sizes would work well for the carbon-supported metal catalyst as well as the activated carbon support used by Hershman.

Hershman also teaches heating the carbon surface to high temperature to activate the surface. See col 3, lines 21-25. Furthermore, Coloma teaches that oxygen-containing surface groups affect the adsorptive ability of the carbon surface, as it pertains to dispersing a metal catalyst and its catalytic ability. See page 299. The skilled artisan would be motivated to heat the carbon surface, before and/or after the dispersion of the metal catalyst, in order to maximize the activity of the carbon surface.

Also absent in Franz is further catalyst characterization including: (1) CO evolution upon heating; (2) surface ratios of carbon atoms to oxygen atoms; and (3) surface layer thickness (4) pore volume.

As discussed above, heating the catalyst surface is known to increase the activity by removal of oxygen-containing surface groups. This removal involves CO evolution. Review of the specification provides no evidence that the particular amount of CO evolution (from residual oxygenated functional groups burning off during heating as CO) is critical to the invention. Absent some evidence that this characteristic is acquired through the use of a specific support and/or specific treatment, it must therefore be concluded that this characteristic would be part of carbon-supported noble metal catalysts prepared by pre-heating the carbon material.

As discussed above, it is known that oxygenated functional groups exist at the surface of carbon supports, so some C:O ratio is present. The present claims recite known methods to

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produce known catalysts, so absent some evidence of criticality, it must be concluded that this ratio is a feature acquired during the preparation. Furthermore, as there is a ratio of carbon and oxygen on the surface, there is also be a layer comprising carbon and oxygen. Finally, it cannot be determined whether or not Franz's catalyst has a pore size in the range recited in the instant claims. Again, as these instant catalyst appears to use conventional materials and methods, it must be concluded that this pore size would be characteristic of known catalysts.

Franz does not teach the use of a "sacrificial reducing agent" in the process. In order to maintain maximum activity in an *oxidation* catalyst, it would be obvious to subject the surface to a reducing agent to keep the catalyst in a maximally *reduced* state. See for example, Ebner, col 7, lines 34-48. It would be obvious to one having ordinary skill in the art to use any conventional reducing agent. The skilled artisan would be particularly motivated to use formaldehyde for this process, as it is formed in the process and could be recycled.

The instant claims also recite recycling the catalyst. One of the attractions of using a heterogeneous catalyst is the ease of separating the catalyst from the process and its ability to be recycled. It would have been obvious to one having ordinary skill in the art to recycle the catalyst for economic reasons.

Also recited in the instant claims are limitations regarding oxygen feed rate, pH, temperature, and concentration of noble metal catalyst on the carbon surface. These are deemed to be result-effective variables that one of ordinary skill in the art would be expected to manipulate to advantage.

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In conclusion, the instant invention appears to be a known process, modified by improvements known in the art. None of the limitations have evidence of criticality. If applicant believes that one or more of the limitations are critical to the invention, then applicant should amend the claims to reflect such critical limitations as well as indicate where in the specification such critical limitations are discussed and demonstrated.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-199 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-53 of copending Application No. 09/^{248,655}~~408,296~~. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are drawn to a process for oxidizing PMIDA to prepare glyphosate using a catalyst system with characteristics

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essentially the same as the generic process recited in application No. 09/408,296. The two applications are deemed to be obvious over one another.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Examiner's hours, phone & fax numbers and other useful information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh Maier whose telephone number is (703) 308-4525 and e-mail address is Leigh.Maier@uspto.gov (NOTE: **The U.S PTO does not accept responsibility for the security of e-mail transmissions by the applicant(s).** Thus, e-mail sent to an examiner should not include confidential information. For further details, see the PTO Internet Usage Policy which has been published in the Federal Register of 21 June 1999, volume 64, number 118.) The examiner can normally be reached on Monday-Friday 8:00 to 4:30 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Gary Geist (703) 308-1701, may be contacted. The fax phone number for Group 1600, Art Unit 1623 is (703) 308-4556 or 305-3592.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-1235.

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Secure and confidential access to patent application status is now available; see <http://www.uspto.gov/ebc/index.html> for more information.

Leigh C. Maier
Patent Examiner
January 5, 2000

Howard C. Lee
Howard C. Lee
Primary Examiner
Art Unit 1623